

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF INDUSTRIAL TECHNOLOGY
DEPARTMENT OF TECHNICAL TEACHER EDUCATION

BACHELOR OF TECHNICAL EDUCATION HONOURS DEGREE:

GENERAL EXAMINATION

COURSE: THEORY: PROJECT MANAGEMENT

TTE 3008

PART : III

MAY 2006

TIME: 3 Hours

100 Marks

INSTRUCTIONS AND INFORMATION FOR CANDIDATES

Answer **Question 1** and any other **THREE** questions.

All questions carry 25 marks each. Begin each question on a fresh page.

Questions may be answered in any order, but parts of one question must be together in the right order.

Subdivision marks are shown in brackets to indicate the length and quality of answer expected.

Marks may be deducted for careless or untidy work.

QUESTION 1

Study the graph in Fig. 1 below which shows some information vital to a project manager.

- (a) Indicate the independent and dependent variables. [3]
- (b) Interpret the graph in terms of the variables shown and explain how a project manager can utilise the displayed information to maximise the process and outcome of a project. [15]
- (c) In general, at what single stage in a project life cycle are most 'finite' resources expended and why? Name three of these resources. [5]
- (d) What is the difference between 'exploitation' and 'exploration' projects? [2]

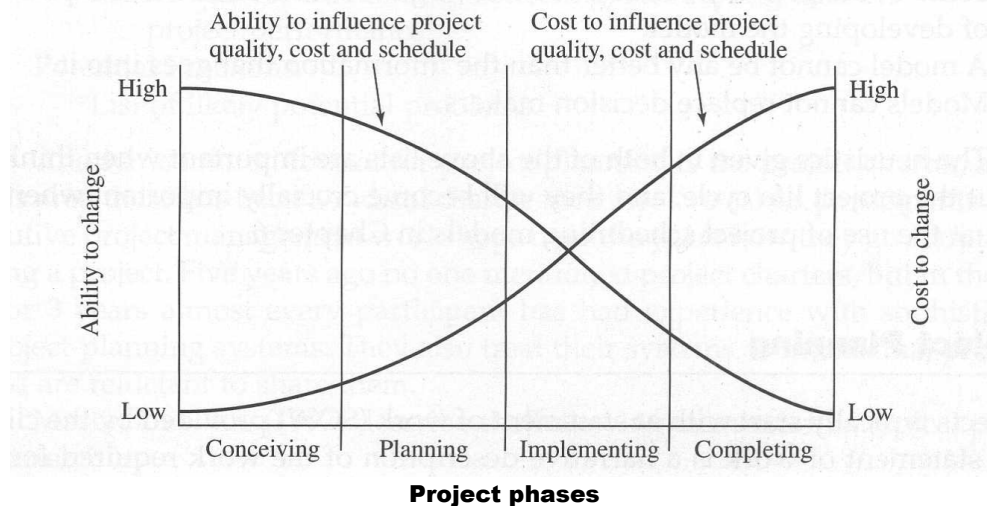


Fig. 1 Ability to change, and cost to make changes over the project life cycle.

QUESTION 2

Traditionally, project success has been measured according to three criteria: cost, time and performance. Fig. 2 below shows an alternative modern view termed the 'quadruple constraint'.

- (a) Use the diagram to compare and contrast the two views. [10]

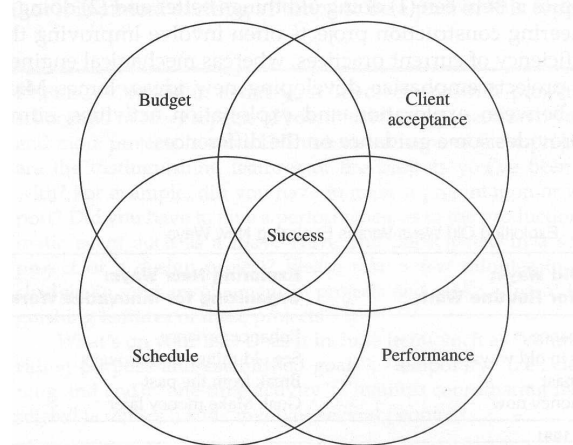


Fig.2 Project Success: Quadruple Constraint

- (b) One strategy for risk management in projects is called 'uncertainty reduction'. Describe five methods of reducing uncertainty in a large-scale project. [10]
- (c) Explain with examples the difference between 'risk avoidance' and 'risk transfer'. [5]

QUESTION 3

Analyse the job advertisement below and answer the questions that follow;

PUBLIC PRIVATE PARTNERSHIP

Project Manager

Reporting to the Head of Public Private Partnership, the successful candidate will participate as a team member in assessing applications from sponsors and partners submitting their own completed investigations and proposals. The incumbent will be required to: •be involved in all stages of project investigations, including the identification, structuring, implementation and exit stages •manage client relationships •represent the IDC at the pre-implementation and implementation phases of projects •represent the IDC on industry task teams and at industry seminars, and •protect the IDC's interest through steering committees.

The incumbent will be in possession of a BSc Engineering coupled with a minimum of three years' industry experience and two years' project analysis experience. The appointee must furthermore possess the following competencies: •**Financial:** *detailed analysis and interpretation of financial statements *detailed understanding and application of financing instruments; •**Technical and analytical:** *detailed understanding of investigation studies and the ability to evaluate project ideas generated externally to the IDC *ability to adapt investigation skills to varied industries *understanding of industrial markets and the ability to undertake and interpret market research; •**Legal:** *reasonable understanding and application of contract and labour law; •**Interpersonal/management:** *ability to maintain good relationships with clients *ability to plan investigations, and schedule internal and external resources *good teamwork and leadership skills *good time management skills to enable effective multi-tasking across several diverse projects; and •**Communication:** *ability to develop detailed bankable investigation reports *ability to concisely communicate complexities in transactions in order to motivate or justify approvals and rejections to management.

- (a) Define *public* and *private* sector projects, justifying why they are thus categorised. Name two projects in which the public and private sectors can go into partnership. [9]
- (b) Analyse the relationship between the qualifications, competencies and anticipated duties of the applicants for this job. [12]
- (c) Why and when would 'investigations' be important in a project? [4]

QUESTION 4

- (a) In Fig. 3 below, analyse in detail the discrepancies between the 'planned' and the 'actual' progress in the project in terms of costs and time from milestone 1 to 7. [20]
- (b) Predict the likely effect of these discrepancies on the actual overall project schedule and costs, and justify your prediction. [5]

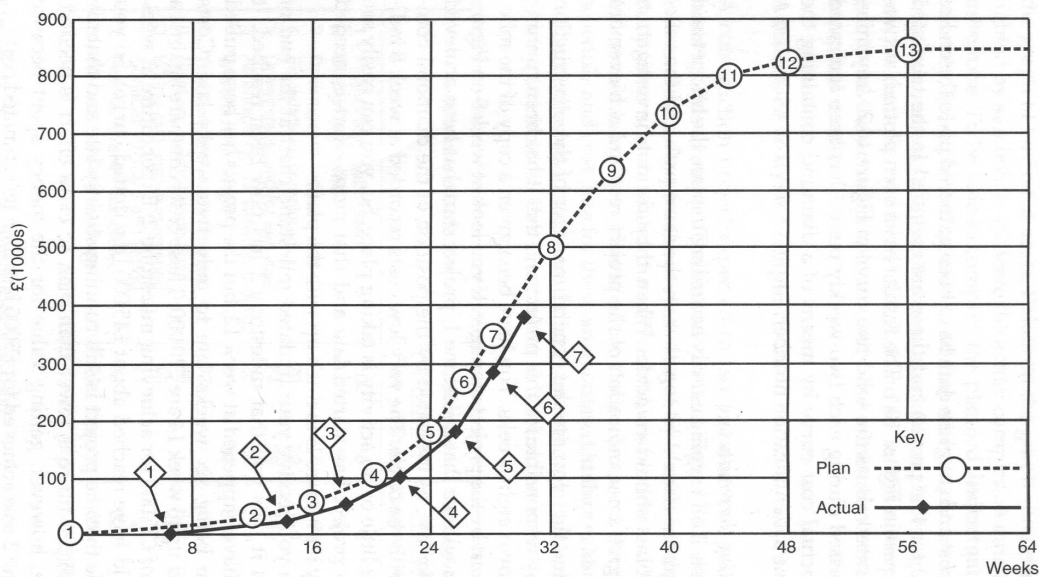


Fig. 3 Comparing project cost and achievement using milestones

QUESTION 5

- (a) Briefly discuss three causes of project failure, giving appropriate examples. [9]
- (b) Describe three project categories that are peculiar to developing countries. [6]
- (c) Think of a project from your experience or from the literature that experienced difficulty or failure, and discuss the reasons for its problems and how these might have been avoided. [10]

END OF EXAMINATION

MARKING GUIDE : TTE3008 PROJECT MANAGEMENT : MAY 2006

Question	Marking Points	Marks
1 (a)	<ul style="list-style-type: none"> • Ability to change/influence project cost, quality and schedule –Dependent • The cost to /change/influence project quality, cost and schedule- dependent • Project phases/life cycle/duration/time - Independent <p align="right">1 mark each</p>	3
1 (b)	<p>Graph interpretation</p> <ul style="list-style-type: none"> • The ability to change or influence the quality, cost and schedule of a project is highest at the beginning, i.e. at conception, and lowest at completion • This ability diminishes progressively in an S-curve fashion as the project progresses • As the project becomes more concrete, it becomes harder to change parts of it/ to influence its course • the cost of changing or influencing the quality, cost and schedule of a project is lowest at the beginning (at conception), and highest at completion stage • this cost increases progressively in S-fashion as the project life cycle progresses • as the project becomes more concrete, it becomes more costly to make alterations • <p>Project manager’s use of data</p> <ul style="list-style-type: none"> • Plan carefully and in detail • Finalise major changes early • Increase supervision/management to reduce errors • Any other valid point : • <p align="right">2 marks each for any 8 points max 15</p>	15
1 (c)	<ul style="list-style-type: none"> • Highest resources used at IMPLEMENTATION stage • This is the concrete stage for maximum application of ideas and plans • Finite resources (any 3 from the list AW) <p>Money, materials, manpower, machinery, merchandise, management, movement</p> <p align="right">1 mark each</p>	5
1 (d)	<ul style="list-style-type: none"> • Exploitation projects: - see old things in old ways, replicate the past, make money now • Exploration projects: - discover, see old things in new ways, break from the past, make money later • <p align="right">1 mark each</p>	2

Question	Marking Points	Marks
2 (a)	<p>Comparisons</p> <ul style="list-style-type: none"> • Overlap/agreement on three criteria, ie • Cost and budget, time and schedule, performance <p>.....</p> <p>Contrasts</p> <ul style="list-style-type: none"> • additional criterion in new model , ‘client acceptance’ • Budget implies planning, control and evaluation/cost is summative • Schedule implies wholesome management/time is limited • Success is measured by a combination/intersection of 4 criteria • Any other valid points:..... <p>.....</p> <p style="text-align: center;">2 marks each for any 5 points well explained</p>	10
2 (b)	<ul style="list-style-type: none"> • Prototyping/simulation/modelling • Detailed Planning • Parallel alternative development • Checking references • Using trained/certified staff • Using proven technology • Verifying the suitability of inputs <p>.....</p> <p style="text-align: center;">2 marks each for any 5 named and explained briefly</p>	10
2 (c)	<p>Risk avoidance</p> <ul style="list-style-type: none"> • Excluding the probability of the occurrence of errors and/or their adverse consequences • E.g. by reducing requirements/increasing budgets/extending schedule, etc • <p>Risk transfer</p> <ul style="list-style-type: none"> • Causing another entity with a better capacity to bear the risk • Eg. Insurance/devolution of power/grassroots decision-making • <p style="text-align: center;">2 marks each for any 3 points expressed clearly max 5</p>	5

Question	Marking Points	Marks
3 (a)	<p>Public sector projects</p> <ul style="list-style-type: none"> • Funded, managed and by the local/central government • For equitable, universal service or product provision nationwide AW • Usually non-profit making e.g. hospitals, schools, roads, parastatals • <p>Private sector projects</p> <ul style="list-style-type: none"> • Funded and managed by individuals, companies, corporates, etc. • Mainly for targeted specific market/clientele • Usually for profit/investment e.g. manufacturing company, retail • <p>Partnership</p> <ul style="list-style-type: none"> • Capital structures: Bridges, dams, buildings, etc • Transport: Airport, railway, road, etc • Any other valid example: <p style="text-align: right;">1 mark each</p>	9
3 (b)	<ul style="list-style-type: none"> • Engineering degree qualification is for a professional with a technical training background • The experience required is both hands-on (industry) and administrative (project-analysis) • The competences required i.e. financial/technical and analytical/legal/management/communication assume someone who has worked in middle/top management • The expected duties are centred around investigations, which calls for someone trained or experienced in purging people, documents and visual exhibits for evidence • Any other valid point : <li style="padding-left: 100px;">: <p style="text-align: center;">Max 3 points each for well presented analysis</p>	12
3 (c)	<ul style="list-style-type: none"> • Project tracking at all stages • Fault finding when reported or observed • Justification for release of funds/increased resources/re-routing, etc. • Justification for change of plans/schedules • Any other valid point : <li style="padding-left: 100px;">: <p style="text-align: right;">1 mark each for any 4 correct points</p>	4

Question	Marking Points	Marks
4 (a)	<ul style="list-style-type: none"> • The project delayed its planned start (Milestone 1) by about 6/7 weeks • By Milestone 2 the delay time was reduced to about 2 weeks/ compression • By Milestone 2 apparently the actual cost was slightly below the planned cost • By Milestone 3 the same trend is maintained as in Milestone 2 • By Milestone 4 the actual is still 2 weeks behind schedule • But the actual cost is rising/now the same as planned/crashing • By Milestone 5 the trend in Milestone 4 is maintained • By Milestone 6 the actual is still 2 weeks behind schedule • But the actual cost has surpassed the planned cost by about £10 000 • By Milestone 7 the two week lag in schedule is maintained • And the actual cost has surpassed further the planned cost by about £30 000 • <p style="text-align: right;">2 marks each max 20</p>	20
4 (b)	<p>Any well-supported prediction will be accepted e.g.</p> <ul style="list-style-type: none"> • The project might finish 2 weeks behind schedule • Provided there is no room for task compression in the further stages • Assuming supervision and resource allocation will not cause unforeseen delays • The project might end up costing more (10% or £85 000) than planned • Due to inflation or adjustments due to delayed start • <p style="text-align: right;">1 mark each</p>	5

Question	Marking Points	Marks
5 (a)	<p>Causes of Project Failure</p> <ul style="list-style-type: none"> • Lack/inadequacy of planning • Lack of sound budgeting/financial backing • Unforeseen external factors (PESTLE) • Any other valid point : <li style="padding-left: 100px;">: <p style="text-align: right;">3 points for each valid point named and explained</p>	9
5 (b)	<ul style="list-style-type: none"> • poverty alleviation – food, shelter, • technology/knowledge transfer - equipment, training, • Infrastructural construction, buildings, dams, roads, rail, etc • Health and disease– control and management • Exploitation of untapped resources • <p style="text-align: right;">2 points each for any 3 points named and described</p>	6
5 (c)	<ul style="list-style-type: none"> • Description of nature, purpose and location of project [2] • Description of failure/difficulty experienced [2] • Reasons for failure [3] • Suggestions of how to have avoided the problems [3] <p style="text-align: right;">Guided scoring for the above aspects</p>	10